

ACSC/DEA/019B/95-05

BATTLE OF BRITAIN TOOLBOOK

A Research Paper

Presented To

The Directorate of Research

Air Command and Staff College

In Partial Fulfillment of the Graduation Requirements of ACSC

By

Major David Brash, Major Debra Donnahoo and Major Timothy Ries

May 1995

Form SF298 Citation Data

Report Date <i>("DD MON YYYY")</i> 00051995	Report Type N/A	Dates Covered (from... to) <i>("DD MON YYYY")</i>
Title and Subtitle Battle of Britain Toolbook		Contract or Grant Number
		Program Element Number
Authors Brash, David; Donnahoo, Debra; Ries, Timothy		Project Number
		Task Number
		Work Unit Number
Performing Organization Name(s) and Address(es) Air Command and Staff College Maxwell AFB, AL 36112		Performing Organization Number(s)
Sponsoring/Monitoring Agency Name(s) and Address(es)		Monitoring Agency Acronym
		Monitoring Agency Report Number(s)
Distribution/Availability Statement Approved for public release, distribution unlimited		
Supplementary Notes		
Abstract		
Subject Terms		
Document Classification unclassified		Classification of SF298 unclassified
Classification of Abstract unclassified		Limitation of Abstract unlimited
Number of Pages 23		

Disclaimer

The views expressed in this academic research paper and the accompanying ToolBook are those of the authors and do not reflect the official policy or position of the US Government or the Department of Defense.

Acknowledgments

We'd like to extend our appreciation to Lt. Col Bert Frandsen and Mr. Chuck Camp for their invaluable advise and encouragement, as well as a special thanks to Ms Julie Hall for her eager assistance and much appreciated guidance in obtaining copyright approvals.

Table of Contents

	<i>Page</i>
ACKNOWLEDGMENTS	ii
ABSTRACT.....	v
OVERVIEW AND OBJECTIVES	1
TOOLBOOK DESCRIPTION	3
METHODOLOGY AND PROCEDURES	7
TECHNOLOGICAL COMMENTS	9
SUMMARY	10
BIBLIOGRAPHY	11
VITA	14

Abstract

This ToolBook is a user friendly computer application intended to provide both faculty and student a comprehensive, yet dynamic, historical case analysis of the Battle of Britain. It innovatively integrates graphic descriptions of the battle, the personalities and technologies involved in the battle, as well as lessons learned with various ACSC course concepts taught throughout the year. As such, it is geared to be used piecemeal as students progress through the ACSC curriculum and should prove to be a valuable training aid.

BATTLE OF BRITAIN TOOLBOOK (ACSC/DEA/019B/95-05)

Overview and Objectives

The Battle of Britain ToolBook features innovation, ACSC curriculum integration, varied sources, and compelling graphic presentation. First, we provide the ACSC faculty with a tool for teaching the facts of the Battle. Secondly, we incorporate various ACSC course concepts throughout the entire ToolBook. Finally, we present a user-friendly computer product complete with vivid animation. These areas will be discussed in turn. Thereafter, production topics are addressed.

The ToolBook is intended for use by the ACSC faculty and students. The scope of the work is a concise integrated description of the Battle of Britain and subsequent application of the lessons learned therein. It addresses a number of areas. Consequently, it is not intended to be digested in one sitting. Although intended as a complete educational package, it is separated into distinct component parts. The ToolBook will help the faculty and facilitate the learning process in two ways. First, as noted, it provides a factual background on the Battle which may be used for case study purposes. Secondly, and unlike other ToolBooks used in class to date, it actually contains sections which incorporate ACSC concepts from courses such as War Theory, Command and Leadership, and The Air Campaign. Here, the body of knowledge is expanded. The integration is the innovation. A complete educational tool from factual background, to course integration and application, to discussion materials is included. Thus, although the ToolBook is large,

it is geared to piecemeal use as the students progress through the ACSC curriculum. The factual description of the Battle is the first component part.

ToolBook Description

The factual statement of the Battle is set forth in sections 2.1 through 7.3.

Organizationally, the status of both sides prior to the Battle is addressed first in Section 2. This section includes important information about the posture of both sides as the Battle of France drew to a close. Maps with graphic animation, accompanied by narrative text, describe the three phases of the 1940 German advance to the French coast. Such topics as the Dunkirk evacuation and German force status at the close of the campaign are addressed because they provide many contextual and operational art elements which effected the Battle. Next, in Section 3, the leaders of both sides are addressed. The purpose for this section is twofold. First, as with Prebattle Status, the thoughts and interaction of these leaders provide many contextual elements which effected the Battle. The planning of Operation Sea Lion with its attendant political and logistics elements is an example. Secondly, the brief biography provided on the leaders triggers many connections, both positive and negative, with the leadership attributes taught in Command and Leadership. Vision, moral courage, and motivation of subordinates are examples here. Section 4 provides the statistics on the aircraft involved in this famous air battle. This section should catch the operator's eye and educate those less familiar with aircraft dimension and capabilities. Further, when advantages and faults of various aircraft are mentioned throughout the analysis, this section serves as a ready reference. Section 5 is a presentation of some of the pilots who fought in the Battle. The goals here are three. First, as in Section 3, short biographies are presented which highlight leadership attributes taught in Command and Leadership. Physical courage, moral courage, and empowerment

are but three examples. Second, the biographies make the ToolBook interesting by personalizing those who fought in the Battle. Here we avoid the dry description of tactics alone and let the reader get a feel for the personalities involved in the conflict. Third, we incorporate the significant contribution of non-British pilots who flew with the RAF in Section 5.3.

Section 6 is the Battle proper. Organizationally, it is separated into the phases of attack used by the Germans. Section 6.1 provides an introduction and overview of the phases. Also, the reader may go to each phase directly from Section 6.1, or from the Table of Contents. Section 6.2 describes the attacks on targets in and around the English Channel. Like all subsections in Section 6, there is a map of the theater. The German attack is presented in graphic animation with the opportunity for the reader to call up a narrative description of the Battle phase and tactics employed. This combination of two media, narrative and animated graphics, make the attack specifics clear. Section 6.3 deals with the heart of the Battle, the Luftwaffe attacks on RAF airfields and radar sites. Again, there is a theater map with animated graphics depicting the German battle plan and accompanying narrative. However, in this most crucial stage of the Battle, there is further information on demand. Specifically, two critical days are presented, Eagle Day and Black Thursday. Here the reader has available call up capability for a map depicting each attack with animation as well as a narrative description of each day's engagements. Section 6.4 concludes the Battle section with a description of the fateful German switch to attacks on London. Again, an animated map and narrative set out the attacks. The factual section of the ToolBook is rounded out with Section 7, a look at technological innovation at play in the Battle. This section is broken down into three parts. They address radar, ULTRA,

and the British command and control system. As with Sections 2, 3, and 6, Section 7 is rich with contextual and operational art elements which had an effect on the Battle. The remaining component parts move into the area of ACSC course concept integration.

The first instance of specific ACSC course integration is Section 8. This section integrates aspects of the War Theory course. Specifically, three air power theorists are presented. Organizationally, the subsections are broken down by theorist; Douhet, Mitchell, and Trenchard respectively. Within each subsection, there is an introductory page which sets out those aspects of the theorist's thought applicable to the Battle. As each aspect is mentioned, the area name is set up in hotword format. For example, Douhet's views on strategic bombardment, air defense, and bombing of population centers are all set up as hotwords in the Douhet introductory text. The reader calls up the information by area. Thereunder is a brief description of the theorist's views in the area followed by application questions which apply the views just summarized to specific tactics or points in the Battle. The application questions serve two purposes. First, they help the reader critically analyze the Battle. Secondly, the questions also crystallize an understanding of the theorist's views. This section serves as another component part of the ToolBook. It may be used in conjunction with the War Theory course, but is not necessary to understand the Battle for case study purposes.

The next instance of specific ACSC course integration is Section 9.1. Specifically, various lessons learned from the Battle are categorized by the individual contextual and operational art elements as taught in War Theory and The Air Campaign courses of instruction. Of course, these lessons are not exhaustive, nor are the contextual and operational art elements listed. Nevertheless, this organization helps the reader to think in

terms of the elements critical to thorough case study analysis. Further, the organization also helps the reader hone a portion of the critical analysis skills necessary to complete the War Theory exam. The designation of certain lessons under certain element headings is subjective to a degree, however, each is supported by the facts and based in part on the instruction received during The Air Campaign course. A final organizational point - Section 9.1 is set up to emphasize historical lessons learned from the Battle of Britain. This should be compared to Section 9.2, addressed below, which treats lessons drawn from the Battle which lend themselves to future application.

Section 9.2 is broken down according to the works of two authors, one American and one British. These authors look back to the Battle of Britain to determine how lessons therefrom have future application. The British author, Group Captain A.G.B. Vallance, addresses British national defense policy in the post Cold War era. Colonel John Warden, the American author, applies lessons from the Battle to illustrate his ideas regarding the air campaign of the future. Both works move the reader to future thought regarding lessons from the Battle. However, Colonel Warden's work particularly addresses concepts taught in the Strategic Structures course and illustrates same by use of particulars from the Battle. Examples here include centers of gravity, measures of merit, and the command and leadership category within the five ring analysis.

Methodology and Procedures

Regarding data compilation, the ToolBook is drawn from 66 sources. These book, periodical, and lecture sources represent a broad spectrum of thought on the Battle. The British and German perspectives are well represented. After-the-fact critical analysis is also included. Broad secondary sources are included. Moreover, primary source material from those involved in the Battle and from the works of the theorists is included. For example, Section 8, which deals with the theorists, is well documented with primary source accounts of each theorist's views. The same section also contains critical assessments of contemporary writers in the area such as Dr. Bernard Brodie. Further, although some areas such as the application questions in Section 8 are somewhat subjective, they are well drawn from the facts of the Battle and the writings of the theorists.

Precise source links are made not just to the analytical part of the ToolBook, but to the factual description of the Battle as well. Here, the citation method used combines DST direction with the ACSC Style Guide for research papers. For each citation, the reader is provided a hotword with the source citation from the bibliography accompanied by an exact page. The hotword takes the reader to one of five bibliography pages which contains the cited source. This system was coordinated with both DR (LTC Stepko) and DST (LTC Novak) prior to ToolBook completion. We recommend this system be adopted as standard format for ToolBook citation in the future because it specifically identifies the citation source. The system reduces the duplication attendant to creation of both a bibliography and end note pages in the ToolBook application. As to photographs used

and copyright implications, copyright approval requests have been sent and are pending. As a backup, should any requests be denied, we contacted the Imperial War Museum in England. There, a contact engaged in three days research to develop a list of 44 reference photos to replace any images that are not approved. The list of references and point of contact are filed with Ms. Hall. The photos, accompanied by copyright release, may be purchased for approximately five dollars apiece.

Technological Comments

As to the technical effort, an omission is first addressed. As a group, we decided to forego AVI (video) use in the ToolBook. First, use of this technology consumes incredible space. In fact, during the course of the year, certain ToolBooks provided the students AVI capability, which was inoperable due to this problem. Second, given our subject matter, and after reviewing the movie, "The Battle of Britain," we believed video would add no more than another bell and whistle to the product. We made a conscious effort to steer clear of such additions put in for their own sake alone. As to the remainder of the technical effort, more than 450 hours were spent creating, changing, and editing the ToolBook on the technical side alone. All images were scanned in using *Adobe Photoshop* , and resized and recolored using *Paint Shop Pro*. Final graphics were captured and cut using *Windows Paintbrush*. Here, we reduced the size of the ToolBook by decreasing colors, even in grayscale. Graphics were created by drawing a picture in *Power Point*, pasting the picture to the ToolBook, and writing a script of instructions which controls the actions of the graphic. All maps were created by drawing them in *Power Point* complete with labels, then capturing them as bitmaps and posting them to the ToolBook. All actions are script driven, requiring approximately 500 separate scripts. This ToolBook can be saved to one 1.44 megabyte disk using *PK Zip*, after saving the ToolBook as an executable.

Summary

In summary, this ToolBook is a user-friendly entertaining computer application. As discussed above, battle sequences in this work compare with any of those currently assigned by ACSC. The animated presentation allows the reader to visualize the execution of the battle plan as it takes place. The product is user friendly because it is set up in a logically organized format from battle progression to practical application. To ensure the reader remains on track, the program is set up to return to the table of contents as a road map at the completion of each section. Further, the product is innovative because it moves well beyond the standard battle ToolBook. The standard ToolBook describes the battle, plain and simple. There is no additional analysis implicit nor explicit. Moreover, there is no overt attempt at ACSC course integration. The integration sets this ToolBook apart. There is both explicit and implicit course integration. Moreover, the component parts of the explicit integration, the theorists (War Theory) and the battle lessons (The Air Campaign) stand on their own as component parts of the overall ToolBook. Simply, the ToolBook presses the reader to independent thought and analysis rather than fact recitation alone.

Bibliography

- Baumbach, Werner. "Why We Lost . . ." The Royal Air Force Review. September 1952: 0-31.
- Bedurftig, Friedemann and Christian Zetner. The Encyclopedia of The Third Reich. New York: Macmillan, 1991
- Berry, F. Clifton. "Battle of Britain 1940: Interview with Wing Commander Bob Stanford Tuck," Air Force Magazine. September 1980: 114-119.
- Brickhill, Paul. Reach for the Sky; The Story of Douglas Bader. London: Collins, 1954.
- Brodie, Bernard. "The Heritage of Douhet," Air University Quarterly Review. VI-2: 64-69, 121-127 (Summer 1953).
- Churchill, Winston S. Memoirs of the Second World War. Boston: Houghton Mifflin Company, 1959.
- Clark, Ronald W. Battle For Britain. London: Harrap, 1965.
- Collier, Basil. The Battle of Britain. New York: Macmillan, 1962.
- Collins, Larry. Is Paris Burning. New York: Simon and Schuster Inc., 1985.
- Cooper, Matthew. The German Air Force. London: Jane's, 1981.
- Davis, Burke. The Billy Mitchell Affair. New York: Random House, 1967.
- Deighton, Len. Battle of Britain. London: George Rainbow Limited, 1980.
- , Fighter, The True Story of The Battle of Britain. New York: Alfred A. Knopf, Inc., 1978.
- Dick, Ron. "Battle of Britain," Air Power History. 37-2:11-25 (Summer 1990).
- Douhet, Giulio. The Command of the Air. Translated by Dino Ferrari. Washington D.C.: Office of Air Force History, 1983.
- Estes, Richard H. "Guilio Douhet: More on Target Than He Knew," Airpower Journal. IV-4:68-78 (Winter 1990).
- Foxley-Norris, Christopher. "A Place for Lord Dowding," The Royal United Services Institute for Defence Studies Journal. Winter 1988:84.
- Galland, Adolph. "Defeat of the Luftwaffe: Fundamental Causes," Air University Quarterly Review. VI-1:18-36 (Spring 1953)
- Gleave, T.P. "The Battle of Britain: Strategy, Tactics, Atmosphere" Flight International. September 16, 1965:494-502.
- Greer Thomas H. "Air Arm Doctrinal Roots," Military Affairs. 20: 202-216 (Spring 1956).

- Gropman, Alan L. "The Battle of Britain and the Principals of War," Aerospace Historian. 18-1:138-144 (Spring-March 1971)
- Hurley, Alfred F. Billy Mitchell, Crusader for Air Power. Bloomington: Indiana University Press, 1975.
- Jablonski, Edward. Terror From the Sky. Garden City, NY: Doubleday & Co., Inc., 1971.
- Janes William H. "Dunkirk: A German Decision" Armour. LXXXIII-3:19-22 (May-June 1974).
- Kaplan, Philip and Richard Collier. Their Finest Hour / The Battle of Britain Remembered. New York: Abbeyville Press, 1989.
- Kesselring, Albert. A Soldiers Record. New York: Morrow, 1954.
- Krepinevich, Andrew F. Jr. "The Military-Technical Revolution," War Theory Course Book. Air Command and Staff College, 1994/95:244-279.
- Lewin, Ronald. Ultra Goes to War; The First Account of World War II's Greatest Secret. New York: McGraw-Hill, 1978
- Liddell Hart, B.H. History of the Second World War. New York: G.P. Punam's Sons, 1970.
- , "How Hitler Saved Britain, Dunkerque and the Fall of France," Military Review. XXXVII-2:54-62 (May 1957).
- , "The Dunkirk 'Halt Order' - A Further Reassessment," The Army Quarterly. LXIX:207-209 (October 1954).
- Madelin, Ian. "The Battle for Britain-Code Name: Operation Sea Lion," The Hawk. May 1990:23-32.
- Manstein, Erich von. Lost Victories. Novato, CA: Presidio Press, 1982.
- Manzo, Louis A. "Morality in War Fighting and Strategic Bombing in World War II," Air Power History. 39-3:35-50 (Fall 1992).
- Mason, Francis K. Battle Over Britain: A History of the German Air Assault on Great Britain. Bourne End, England: Aston, 1990.
- Mellano, Pietro. "Germany Strategy and its Errors in World War II," Military Review. XXXIII-4:78-85 (July 1953). Translated by Military Review from an Article by Mellano in Rivista Militare. November 1952.
- Mitcham, Samuel W. Hitlers Field Marshalls and Their Battles. Chelsea, MI: Scarborough House, 1990.
- , Men of the Luftwaffe. Novato, CA: Presidio Press, 1988.
- Mitchell, William. "American Leadership in Aeronautics," The Saturday Evening Post. January 10, 1925:18-19, 148, 153.
- , Memoirs of World War One, From Start to Finish Our Greatest War. New York: Random House, 1928.

- . Skyways, A Book on Modern Aeronautics. Philadelphia: J.B. Lippincott Co., 1930.
- . Winged Defense. New York: Dover Publications, 1925.
- Monsarrat, John. "Radar in Retrospect, How It Helped Win the Battle of Britain and the Battle of Okinawa," Journal of Electronic Defense. 14-10:92-100 (October 1991).
- Muller, Richard. "German General Staff," ACSC Lecture, 1994.
- Murray, Williamson. Strategy for Defeat, The Luftwaffe 1933-1945. Maxwell AFB, AL: Air University Press, 1983.
- Musciano, Walter A. Messerschmitt Aces. New York: Arco, 1982.
- Newton-Dunn, Bill. Big Wing: The Biography of Air Chief Marshal Sir Trafford Leigh-Mallory. Shrewsbury, England: AirLife, 1992.
- Orange, Vincent. A Biography of Air Chief Marshall Sir Keith Park. London: Methuen, 1984.
- Plehwe, Friedrich-Karl von. "Operation Sealion 1940," Journal of the Royal United Services Institute for Defense Studies. March 1973:47-53.
- Postec, A. "Operation 'SeeLowe'," Military Review. February 1953: 76-81. (Translated by Military Review from an article by Postec in La Revue Maritime. October 1952.
- Preston, David L. "The Key to Victory: Fighter Command and the Tactical Air Reserves During the Battle of Britain," Air Power History. 41-4:18-29 (Winter 1994).
- Probert, H.A. "The RAF in the Battle of France" The Hawk. May 1990:13-21.
- Ramsey, Winston G. (Editor). The Battle of Britain Then and Now. London: Battle of Britain Prints International, 1989
- Ransom, Harry H. "Lord Trenchard, Architect of Air Power," USAF Quarterly Review. VIII-3: 59-67 (Summer 1956).
- Ray, John. The Battle of Britain New Perspectives, Behind the Scenes of the Great Air War. London: Arms and Armour Press, 1994.
- Richards, Denis. Royal Air Force 1939-1945. London: H.M. Stationary Off., 1954.
- Richards, Denis and Richard Hough. The Battle of Britain. New York: Norton, 1989.
- Saundy Robert. "Prophet of Air Power," The Aeroplane. April 27, 1956:342-343.
- Taylor, Telford. "Indecision," Army. April 1958:59-64.
- Trenchard, Hugh Montague. "Air Power and National Security," Royal Air Force Pamphlet. August 1946.
- . "Aspects of Service Aviation," The Army Quarterly. II-1:10-21 (April 1921).
- . "The Principles of Air Power in War," Air Power, Three Papers by the Viscount Trenchard. Paper Two: 18-28 (May 1945).
- Vallance, A.G. "Battle of Britain 2020," The Hawk. May 1990:51-60.
- Waage, Johan. The Narvik Campaign. London: Harrap, 1964.

Warden, John. The Air Campaign. McLean, VA: Pergamon-Brassey's International Defense Publishers, 1989.

Woodward, Sir Llewellyn. Great Britain and the War of 1914-1918. London: Methuen & Co. Ltd., 1967.

Vita

Major David F. Brash

Major David F. Brash received a Bachelor of Arts Degree in Political Science from Randolph-Macon College in Ashland, VA in 1980. He Received his Juris Doctor in 1983 from the University of Puget Sound School of Law, Tacoma, WA. Major Brash is admitted to practice law in the states of MD and CO and before the US Court of Military Appeals. He received his commission in 1984 through the Direct Appointment Program. After completion of the Judge Advocate Staff Officer Course at Maxwell AFB, AL, he was assigned to Whiteman AFB MO as Assistant Staff Judge Advocate. Major Brash was next assigned to Comiso Air Station, Italy where he was Area Defense Counsel. In 1987, Major Brash was selected as a Circuit Defense Counsel for the First Circuit Trial Judiciary at Bolling AFB where he defended over one hundred trials by court martial. While at the First Circuit, he also taught advocacy as an adjunct faculty member at the Judge Advocate General School at Maxwell AFB. In 1990, Major Brash was selected for the Masters of Law program in labor law. He secured his LL.M. degree from Georgetown University Law Center. Major Brash was next assigned to the Central Labor Law Office. In January of 1993, Major Brash was reassigned within the General Litigation Division to the Civilian Personnel Branch. Upon completion of Air Command and Staff College, Major Brash will be assigned as the Staff Judge Advocate at Maxwell AFB, AL.

Major David Brash
3350 Royal Carriage
Montgomery, AL 36116

Major Debra D. Donnahoo

Major Donnahoo received her commission in the United States Air Force through Officers Training School in August 1980. She has served five tours with the Air Force Office of Special Investigations as a Special Investigator, Commander, Staff Officer, and most recently, as the Executive Officer to the Commander, AFOSI. Prior to that position, she served on the Secretary of the Air Force's staff, working for the Air Force Inspector General. Major Donnahoo received a Masters of Science in International Affairs in 1986 from George Washington University as an Air Force Institute of Technology student and completed Squadron Officer School both by correspondence and in-residence. Upon completion of Air Command and Staff College, Lieutenant Colonel Select Donnahoo will be assigned as the Commander, AFOSI Detachment 401 at Randolph AFB, TX.

Major Debra Donnahoo
13418 Hollow Run
San Antonio, TX 78231

Major Timothy Ries

Tim Ries graduated from St. Thomas College in Denver, Colorado, with a BA degree in Humanities; and later from the University of Colorado in Boulder, Colorado, with an MA in Education, Guidance and Counseling. Major Ries was commissioned an officer in the USAF through Officer Training School in January of 1980. In early 1980, he became an adjutant in the 335th Tactical Fighter Squadron, Seymour Johnson AFB, NC. Tim changed careers in late 1981, becoming an AFOSI Special Agent, where he was chief of a narcotics unit at Lowry AFB, CO, for nearly two years followed with a tour as an AFOSI Detachment Commander at RAF Chicksands, UK. At this point, Major Ries became the Commandant of Cadets at Colorado State University, and then, returning to AFOSI, he was assigned to HQ AFOSI in Washington DC, as a Resource Programmer and Policy Officer. In 1992, he was selected for a tour on the Air Staff in the Resources Directorate of the Office of the Inspector General, where he served until his arrival at ACSC in the Fall of 1994. Upon completion of Air Command and Staff College, Major Ries will serve as the Commander, AFOSI Detachment 549 Kapaun AS Germany.

Major Timothy Ries
675 Alton Way #10B
Denver CO 80231

DISTRIBUTION A:

Approved for public release; distribution is unlimited.

Air Command and Staff College
Maxwell AFB, Al 36112